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IBM-281

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Gareth Geoffrey Hougham
Serial Number : 09/834,848
Filing Date : April 13, 2001
Examiner : John J. Zimmerman
Group Art Unit : 1775
For : DEFORMABLE COATED WICK
LIQUID SPILLED MATERIAL
TRANSFER

To: The Honorable Commissioner of
Patents and Trademarks
Post Office Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Official Action dated February 22, 2005 please amend the above-identified application as set forth in Appendix A.

The Examiner is requested to reconsider the rejection of Claim 16 under 35 U.S.C. 102(b) as being anticipated by Yan (U.S. Patent 5,322,628).

The present invention relates to the handling of materials where it is necessary to transfer a spilled quantity of a material from the location where the spillage occurred to a different location and in some instances to storage. With certain materials environmental problems are present. The material in the present invention is liquid metal mercury. The setting for the use of

the present invention is home, hospital and laboratory settings. The spilled metal mercury material is transferred from the spillage location using a member having a thin surface coating of a metal that has a high affinity for the spilled material. The spill transfer member will have a large spill material receiving surface area. The invention, in particular, is directed to cleaning up spilled droplets of liquid metal mercury using a spilled material transfer element containing a deformable supporting member on which a coating of a material having a high affinity for the spilled material. A spillage of mercury is readily cleaned up when a copper supporting member coated with gold is used to collect the mercury. The mechanism of the system involves absorption and wicking as now set forth in Claim 16.

The Yan reference relates to an adsorption system. An operative word here is adsorption. Applicants respectfully point out that “adsorption” is defined as the adhesion in an extremely thin layer of molecules (as of gases, solutes or liquids) to the surfaces of solid bodies or liquids with which they are in contact. The adsorption system of Yan is a composite drier-bed, having at least two distinct adsorption regions for simultaneously drying and *removing metallic/inorganic and organic forms of mercury* from a fluid. It includes a container having an entrance area and an exit area; a distinct first region located within the container and proximal to the entrance area of a porous substrate having elemental silver associated therewith; and a distinct second region adjacent thereto of a porous substrate having elemental gold associated therewith. The first region substantially removes water and metallic forms of mercury and the second region substantially removes organic forms of mercury and residual water from said fluid.

The Examiner supports his rejection of Claim 16 asserting that “Yan discloses removing mercury from liquid using capillary tubes packed with gold coated zeolite particles...” Citing Example 2, column 8, lines 45 - 66. Then stating that with respect to the limitation “deformable absorber,” the mass of gold coated zeolite particles would be inherently “deformable” and also act as an absorber for mercury.

Applicants respectfully submit that the Examiner's assertions are incorrect. Example 2 states as its title: "Removal of mercury from Gas Stream." This Example is not directed toward removal of mercury from a liquid.

The Yan invention is directed to a particular step involved in hydrocarbon processing wherein Example 2 states: "*Removal of mercury from Gas Stream* Zeolite 4A extrudates are crushed and sized to 40-60 mesh. The crushed zeolite was impregnated with aqueous silver acetate solution and dried in accordance with Example 1. The silver constituted 0.1% by weight of the zeolite. The zeolite was dried in a vacuum oven at 110 degrees C. for about 1 hour. Three separate packed beds were made with the prepared zeolite adsorbents. The first packed bed consisted of only the 4A adsorbent having 0.1% silver impregnated thereon. The adsorbent was packed into a capillary tube having a 1 mm internal diameter. The second packed bed consisted of a composite of two separate regions: the first or lower region furthest from the top of capillary tube comprised 0.01% Au/4A; the second region, closest to the top of the capillary tube and adjacent to the first region comprised 0.01% Ag/4A. A third packed bed was prepared using only 4A with 0.01% gold. The adsorbent was activated by passing through nitrogen at 350 degrees C. for 1 hour and then cooled to 22 degrees C. for adsorption tests. Through each of the separate packed tubes at 22 degrees C., 100 cc/min of N₂ containing 15 ppb of dimethyl mercury was passed. The dimethyl mercury in a refractory organic mercury compound. The mercury content of the effluent gas was measured using a Jerome 301 instrument. The results, shown graphically in FIG. 2, indicate the following results; Ag/4A is not effective for removing dimethyl mercury, but is effective at removing metallic mercury; Au/4A is extremely effective at removing dimethyl mercury, and over 95% of the organic mercury is removed before any significant leakage of mercury in the effluent is detected. Co-impregnation of silver and gold could lead to the formation of a single particle alloy and is less effective. Thus, the combination of Ag/4A and Au/4A used in tandem, with Ag/4A at the top or entrance of the composite drier-bed and Au/4A at the bottom or exit of the drier-bed, would produce an effective means for removing both metallic and organic mercury." (Emphasis added)

The coated zeolite is “packed” into the capillary tubes. This means that the coated zeolite is made into a “compact bundle.” (See Webster’s Ninth New Dictionary, p.845.) The language of Yan that the material is “packed” does not support the Examiner’s assertion that the tube would be deformable. Further Yan, as stated above has two sequential treatments (regions) of the hydrocarbon gas stream he is treating; the first region contains silver and removes water and metallic mercury and the second region contains gold and removes organic forms of mercury and residual water.

Thus there are a number of distinguishing features present in this case. Applicants’ invention is applied to liquid metal mercury (page 6, line 15). In the region where Yan adsorbs metal mercury he uses elemental silver. In Yan’s second region he uses gold, but that is to extract the organic mercury compounds. (See Yan, Abstract of the Disclosure) Thus Yan does not teach the removal of metal mercury using gold using the same article as Applicants. Example 2 of Yan supports this assertion.

Next, Applicants’ invention is directed toward an “absorption” process. “Absorption is the ability of a solid porous material to hold, within its body, relatively large quantities of gases or liquids.” (Concise Chemical and Technical Dictionary, page 5, 1986) Further, the instant application claims a “wicking transfer element.” (Page 5, line 11) This covers the longitudinal flow of the mercury. In Yan, the molecular sieve extracts the mercury but does not move it. Applicants’ invention can absorb the mercury and store it so that it can be carried to a safe disposal area or stored at a remote site in an appropriate container for further use.

There is a structural difference between the Yan article and Applicants’ invention. Applicants’ invention is portable (i.e., a hand tool), is deformable, removes only liquid metal mercury; whereas, Yan’s invention is a stationery operation in which the gas passes through the zeolite which extracts the organic metal, the tubes are rigid and the gold used is only for the organic mercury. The topic of “inherency will be addressed below. Thus portability to be able to go to the scene of a spill and absorb the mercury and then remove oneself from the scene is not present in the Yan disclosure.

The Examiner is requested to reconsider the rejection of Claim 16 under 35 U.S.C. 102(b) as being anticipated by Williston (U.S. Patent 3,232,033).

Williston does not disclose the elements now in Applicants' Claim 16. Insofar as it can be used in Section 102 (b), there is no equivalence between the porous wool and the metals claimed by Applicants. Thus each and every element claimed by Applicants is not found in the specification of Williston.

The Examiner is requested to reconsider the rejection of Claims 16 and 17 under 35 U.S.C. 102(b) as being anticipated by Hansenpusch (Deutsches Offenlegenschrift 3729030A1).

Hansenpusch does not disclose the elements present now in Applicants' Claims 16 and 17. Each and every element claimed by Applicants is not found in the specification of Hansenpusch.

Applicants respectfully submit that the specificity of these disclosures does not rise to the level required to qualify as an appropriate 102 reference with respect to Applicant's invention.

Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. (Citations omitted) In re Lonnie T. Spada et al., 911 F.2d 705, 708 (Fed. Cir. 1990)

With respect to "inherent" rejections issued concerning Claim 16 and 17 based upon Ian Wilson and Hansenpusch, the Examiner asserts that the teachings found therein inherently meet the "deformable" limitation defined by Applicants.

A proper "inherent" rejection arises from a disclosure that is necessarily contained in the prior art. The Examiner has not produced a single passage in the art which discloses facts from which his rejection may properly be inferred. His rejection is based upon a bald assertion. At best, the "inherency" assertion rejecting the claims in this case is a matter of hindsight based on Applicant's disclosure. The missing claim elements must necessarily be logically deduced from

disclosures in the prior art, if the “inherency” rejection is to be found proper. There is nothing in the prior art which would lead even the skilled artisan, to conclude that the elements that the Examiner asserts are “inherent” in the references. The skilled artisan is not the test. The standard for 35 U.S.C. 102 is whether each and every element is found in the prior art disclosure.

The Yan rigid tubing of an adsorption fluidized bed, the Williston wool substrate and the “shotgun” disclosure of Hansenpusch are in no way inherent in Applicants’ Claim 16 or 17. There is no room for subjectivity in a 102 rejection.

Applicants submit that the Examiner’s anticipation rejections of the claims are incomplete as he has not provided the proper foundations for each of the rejections. A substantial portion of the rejection of Claim 16 and 17 is based upon assertions by the Examiner as to his inferences as to the content of the prior art.

37 C.F.R. 1.104(d)(2) states “...When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons...” Applicants submit that the Examiner should comply with the excerpt of 37 C.F.R. 1.104 cited above and provide the required information relating to the inherency to Applicants.

The Examiner is respectfully requested to reconsider his rejection of Claims 16 and 17, under 35 U.S.C. §103(a) as being unpatentable over United States Patent 4,076,553 to Seidenberger, in view of Hansenpusch (Deutsches Offenlegenschrift 3729030A1) and further in view of Jackson (U.S. Patent 3715,797) or Sprig (U.S. Patent 4,416,408), and further in view of Gunter (U.S. Patent 4,125,387).

Seidenberger discloses employing zinc plated metal wool to collect spilled liquid elemental mercury. He states that the zinc plated metal wool is first activated by immersion in a

solution of an activator acid. He teaches that moderately strong organic acids (succinic, tartaric, ascorbic, fumaric, malic, oxalic, adipic, sulfamic, and citric acid) and dilute mineral acid solutions will activate the zinc plated wool to varying degrees. The activator acid solutions generally contain from about 0.5 to about 3% by weight of the acid. The zinc plated metal wool is generally immersed in the acid activator solution for from about 0.25 to about 2.0 minutes for activation and then applied to the spill of liquid elemental mercury.

There is no basis to combine the Seidenberger patent with the teaching of Hansenpusch. As noted, Seidenberger requires an acid activation treatment. This step modifies the surface of the zinc plated wool so that it effects the desired result. When does one then add the gold of Hansenpusch; before or after the activation? The Seidenberger treatment results in a product which is operative. There is no reason to try to improve on it. The question arises what effect the addition of gold to the wool before or after the treatment will have on the product. The skilled artisan would not know this as the surface of the wool is obviously modified.

In analyzing the multiple references cited, it is questionable whether the skilled artisan would look to Hasenpusch to supplement the teaching of the Seidenberger primary reference. Considering what are the essential features of each of the inventions in these patents, the skilled artisan would not instinctively take the gold of Hasenpusch and add it to the overall teaching of the Seidenberger reference. The feature of Hasenpusch that the Examiner is relying upon is gold. Applicants claim a combination of elements that are different in kind from the zinc coated wool disclosed by Seidenberger. Thus the pathway (the gold teaching) that is the basis for the combination is not what Applicants claim so the combination is improper.

The lack of relevance of the multiple disclosures in the five inventions cited as prior art as applied to the present invention serves to rebut the rejection of the claims under 35 U.S.C. 103. Applicants submit that the prior art does not allow or support the conclusion of obviousness that the Examiner seeks to establish.

The references to Seidenberger, Hasenpusch, Jackson, Spirig and Gunter contain disclosures that when combined, do not support each other. It appears from a review of the references that if an element in the Seidenberger, Hasenpusch, Jackson, Spirig and Gunter systems is included in any of them, the Examiner is asserting that these elements, without more, are suitable to render obvious the present invention.

Applicants respectfully submit that the five disclosures, alone and/or in combination do not rise to the level required to qualify as an appropriate reference with respect to Applicants' invention.

Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. (Citations omitted) In re Lonnie T. Spada et al., 911 F.2d 705, 708 (Fed. Cir. 1990)

The references as noted, alone, or in combination, do not disclose or even imply the structure of the transfer hand tool of the present invention. In the rejection, the Examiner is selectively picking and choosing individual elements disclosed in the references to the exclusion of what the references as a whole teach to one skilled in the art. For example, to arrive at Applicants' invention, the person skilled in the art would have to randomly pick and choose among a number of different features found in Hasenpusch, Jackson, Spirig and Gunter with the only guidance as to what to select being provided by Applicants disclosure since Seidenberg does not teach the same article. Based upon the skilled artisan's reading and knowledge of the five systems disclosed and their respective objectives and how they are implemented, it is unlikely that the person skilled in the art would use Hasenpusch, Jackson, Spirig and Gunter in combination with Seidenberg.

In order to analyze the propriety of the Examiner's rejections in this case, a review of the pertinent applicable law relating to 35 U.S.C. § 103 is warranted. The Examiner has applied the five references discussed above using selective combinations to render obvious the invention.

The Court of Appeals for the Federal Circuit has set guidelines governing such application of references. These guidelines are, as stated are found in Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ, 543, 551:

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleaned from the invention itself.

A representative case relying upon this rule of law is Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ 2d 1434 (Fed. Cir. 1988). The district court in Uniroyal found that a combination of various features from a plurality of prior art references suggested the claimed invention of the patent in suit. The Federal Circuit in its decision found that the district court did not show, however, that there was any teaching or suggestion in any of the references, or in the prior art as a whole, that would lead one with ordinary skill in the art to make the combination. The Federal Circuit opined:

Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. [837 F.2d at 1051, 5 USPQ 2d at 1438, citing Lindemann, 730 F.2d 1452, 221 USPQ 481, 488 (Fed. Cir. 1984).]

The Examiner has selected certain elements from the cited references for the sake of showing the individual elements claimed without regard to the total teaching of the five references.

The Examiner in his application of the cited references is improperly picking and choosing. The rejection is a piecemeal construction of the invention. Such piecemeal reconstruction of the prior art patents in light of the instant disclosure is contrary to the requirements of 35 U.S.C. § 103.

The ever present question in cases within the ambit of 35 U.S.C. § 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the teachings of the prior art at the time the invention was made. It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. (Emphasis in original) In re Wesslau 147 U.S.P.Q. 391, 393 (CCPA 1965)

This holding succinctly summarizes the Examiner's application of references in this case, because the Examiner did in fact pick and choose so much of the Hasenpusch (gold element),

Jackson and Spirig (braided) and Gunter (which states various wick materials may be used in the non-analogous fin cooler plates and tubes art shown therein. Materials suitable for wicks include cloth, glass fibers, wire screening, ceramics and the like) references with Seidenberger to support the rejections and did not cover completely in the Office Action the full scope of what these varied disclosure references fairly suggest to one skilled in the art.

Further, the Federal Circuit has stated that the Patent Office bears the burden of establishing obviousness. It held this burden can only be satisfied by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the reference.

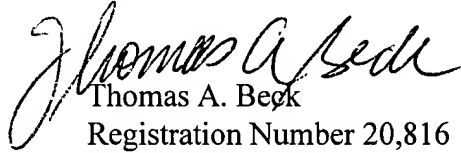
Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hosp. Sys., 732 F.2d at 1577, 221 USPQ at 933. [837 F.2d at 1075, 5 USPQ 2d at 1599.]

The court concluded its discussion of this issue by stating that teachings or references can be combined only if there is some suggestion to do so. In the present case, the skilled artisan, viewing the references would not be directed toward Applicants' apparatus. There can reasonably be no system such as Applicants' emanating from the references as the basic systems of all five references are different. There is no proper basis to combine them.

Applicants have attempted in this response to revise the language of Claims 16 and 17 in this case to specifically define the invention to clear up any ambiguities that may have existed in the wording heretofore. Applicant believes that the amended claims are in a form which should result in their allowability. If the Examiner wishes to discuss via telephone, the substance of any of the proposed claims contained herein with the intent of putting them into an allowable form, Applicants' attorney will be glad to speak with him at a mutually agreeable time and will cooperate in any way possible.

In view of the arguments and modifications to the claims, allowance of this case is warranted. Such favorable action is respectfully solicited.

Respectfully Submitted,


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I hereby certify that this paper is being mailed via the United States Postal Service, first class mail, on the date indicated below addressed to the Commissioner of Patents and Trademarks, Post Office Box 1450, Alexandria, VA 22313-1450

Signature  Date: May 22, 2005
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